

Application No. 10/042,032
Response to Final Office Action

REMARKS

Reconsideration of this application is respectfully requested.

ALLOWABLE SUBJECT MATTER

The Examiner's indication of the allowability of the subject matter of claims 32, 35 and 36 is respectfully acknowledged.

These claims, however, have not been rewritten in independent form at this time since, as set forth in detail hereinbelow, it is respectfully submitted that their respective parent claims also recite allowable subject matter.

THE PRIOR ART REJECTION

Claims 28-31, 33 and 34 were rejected under 35 USC 103 as being obvious in view of newly cited USP 5,171,963 ("Saruta et al"). This rejection, however, is respectfully traversed.

Re: Claim 28

Saruta et al discloses in Fig. 1 thereof an XY stage 3 on which a liquid crystal panel as an object to be processed is moved in the XY direction, wherein a portal column is fixed on a base 2 to stride over the XY stage 3, and a Z axis table 4 moves a laser head 9 and a microscope (a revolver 5 and a CCD camera 7) as one with the column, in the Z direction.

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It is respectfully pointed out, however, that in Saruta et al, there are no pair of guide rails to move the column in the Y direction. The Examiner appears to regard the guide rail to move the Y stage of the XY stage 3 (shown in Fig. 1 of Saruta et al) as the equivalent of the pair of guide rails on which the observation unit supporting section are moved as according to the claimed present invention. Regarding this matter, the Examiner has expressly acknowledged that Saruta et al does not disclose support columns which travel along the guide rails. Nevertheless, the Examiner has asserted that it would have been obvious to move the columns in Saruta et al along the guide rails, in order to more easily move the CCD camera. Thus, there appears to be a contradiction in the Examiner's reasoning.

The purpose of the invention in Saruta et al is to solve the problem of the decrease of the holding stiffness of the head due to moving the head in the XY direction. In order to solve this problem, in Saruta et al the head is fixed to the column and, also, the column is fixed on the base 2. This results in improvement of the holding stiffness of the head.

On the other hand, the apparatus of the present invention comprises a portal observation unit supporting section (5) that possesses high stiffness, in order to improve the stiffness of a micro observation unit (6), as in Saruta et al. Also, the strength of the portal observation unit supporting section (5)

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according to the present invention has been further increased by making the length of the horizontal arm as short as possible. In the laser processing device disclosed in Fig. 1 of Saruta et al, by contrast, the horizontal arm of the portal column must be at least 1000mm x 2, 2000mm in length to move the oversize liquid crystal glass substrate, which is 1000mm x 1500mm, in the XY direction. And in this connection, it is noted that the longer the horizontal arm is, the weaker it becomes.

Therefore, according to the structure of the present invention as recited in claim 28, the oversize liquid crystal glass substrate is held and the micro observation unit is made to scan in the XY direction to make the length of the horizontal arm of the observation unit supporting section as short as possible. This structure makes it possible for the length of the horizontal arm to become roughly the same length as the width of the oversize liquid crystal glass substrate, and the stiffness of the supporting unit is improved.

It is respectfully submitted that Saruta et al does not disclose any detailed structure for moving the head thereof in the XY direction. The Examiner nevertheless asserts that it would be obvious to modify the prior art, which has problems in holding stiffness, with the invention in Saruta et al but it is respectfully submitted that the problem of the holding stiffness would then not be solved.

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Still further, it is respectfully pointed out that as the liquid crystal glass substrate becomes oversize, another problem arises when an XY stage having the structure disclosed in Saruta et al is adopted. Namely, four times the area of the oversize substrate is necessary to achieve an appropriate moving range of the XY stage and therefore, the whole device becomes large. The structure of the claimed present invention solves this problem by fixing the stage, moving the observation unit supporting section (5) in the Y direction, and moving the micro observation unit (6) in the X direction along the horizontal arm of the observation unit supporting section (5).

In summary, the claimed present invention has the two effects of improving, as much as possible, the stiffness of the observation unit supporting section (5) and downsizing the whole device. And it is respectfully submitted that the structural features and advantageous effects of the present invention as recited in claim 28 are not at all disclosed, taught or suggested by Saruta et al.

Re: Claim 29

It is respectfully pointed out, moreover, that the XY stage disclosed in Saruta et al is movable in the XY direction due to each pair of guide rails, and the column is fixed on the base. Therefore, Saruta et al does not suggest retreating the column as

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according to the present invention as recited in claim 29.

Re: Claim 30

Still further, it is respectfully pointed out that the head of Saruta et al is fixed to the column, and that this reference therefore does not disclose, teach or suggest moving the head as in the micro inspection unit of the present invention as recited in claim 30.

Re: Claim 31

And finally, it is respectfully submitted that inspection of a substrate by a microscope using a linear light source as the transmission light source would not have been obvious because the actual situation is that transmission illumination is conducted by facing the objective lens of the microscope with the condenser lens.

* * * * *


In view of the foregoing, it is respectfully submitted that the present invention as recited in independent claim 28 and each of claims 29-31, 33 and 34 (as well as allowable claims 32, 35 and 36) depending from claim 28 patentably distinguishes over Saruta et al under 35 USC 103.

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Accordingly, allowance of all of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,


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